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Water Efficient Product Market Enhancement Program Stakeholder Meeting Phoenix Arizona February 17, 2004

Can Design, Installation, and Operation be Certified to Achieve Water-efficient Irrigation?

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Outline

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Overview

Most water efficiency experts agree that...

“It is not the choice of plants alone which reduces landscape water use”

Reductions occur as well from ....“Designing efficient watering systems which are installed by certified or licensed installers that install as per specifications and are operated by trained staff that make scheduling and other operational decisions from a high proficiency level.”

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Certified Irrigation ?

Can Design, Installation, and Operation be certified to achieve water-efficient irrigation?

- Confirm
- To attest as being true or as represented or as meeting a standard
- To inform with certainty
- To assure
- To guarantee
- Certificate for meeting a standard
- License to perform work

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Efficient Irrigation ?

Can Design, Installation, and Operation be certified to achieve water-efficient irrigation?

- Productive without waste
- Efficient operation
- Effective operation as measured by a comparison of production with cost (as in water, energy, time, money)
- The ratio of the useful energy (water) delivered by a dynamic system to the energy supplied to it

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Design

Design, installation, and operation can be certified to achieve water efficient irrigation.

"Since the operation of the irrigation system encompasses any prior design and installation, then water use efficiency can be calculated based on the actual amount of irrigation water used (as can be read from the meter for some prior period of time, say a month) and the expected (calculated) net plant water requirement (as can be determined from grass reference ET data, the landscape coefficient and rainfall for the same prior period of time)."

Jim McCabe Sensible Technologies

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Design

Alternatively, each of design, installation, and operation can be separately certified based on water use efficiency standards (or goals).

Design distribution uniformity (DULQ) can be calculated from head profile data and head layout. From this, one can calculate water use efficiency as a run time multiplier.

Factors To Be Considered

- When evaluating an irrigation system there are 2 factors that must be considered;
  - The system must be able to supply the plants needs (adequacy). (sufficient for a specific requirement)
  - It must be able to do this with an economically acceptable efficiency.
- Suggested Approach:
  - Answer adequacy question, then determine probable resulting efficiency

Installation

Installation can be certified to achieve water efficient irrigation.

“The installation DULQ can be measured with catch cans, resulting also in calculation of irrigation system efficiency as a run time multiplier.”

Jim McCabe Sensible Technologies

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Certification Installation Guidelines

- Install irrigation as shown on the plans and as outlined in the specifications.
  - *(plans must be accurate and specs site specific*)
- Install irrigation-only meters (deduct meters)
- Install rain shut-off devices
- Require check valves to prevent low head drain
- Use drip or other low volume irrigation where applicable
- Submit installed irrigation system to an irrigation audit. System shall meet a minimum average distribution uniformity of .625

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Operation

Operation can be certified to achieve water efficient irrigation.

"The actual schedule operation can be checked by evaluating actual water usage over a period of time compared to a calculated (after the fact) water usage based on actual reference ET and rainfall data that had occurred for the same period of time."

Jim McCabe Sensible Technologies

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Certification Operating Guidelines

- Keep on file specifications for all irrigation system components originally proposed and use same when making repairs or replacing parts
- Monitor landscape water use for each site to ensure supplemental watering remains within budget during plant establishment period
- Adjust controllers as often as possible to match weather conditions

Certification Operating Guidelines

- Use soil sensors where applicable
- Scheduled walk through of irrigation system during spring start-up and throughout the irrigation season
- Audit the system annually to allow accurate scheduling of the irrigation system which allows the auditor to identify problems that could affect system efficiency

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Recommendations

To achieve water efficient irrigation a system must...

- Be designed by a certified or licensed designer (CID)
- Computer design tested for efficiency prior to installation ensuring minimum operational requirements (DU .625 or higher) will be met
- Certified irrigation assessment/audit conducted by certified auditor (CLIA) after installation ensuring that an operating minimum of no less than DU .625 has been achieved

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Recommendations

- Irrigation system audits are to be conducted every year to ensure the system continues to operate at or above the minimum
- Regularly scheduled irrigation system inspections occur throughout the irrigation period on a monthly basis or more frequently by a certified irrigation technician (CIT or CIC)
- Ongoing annual training of operational personnel to keep up with the rapid technological advances occurring within the irrigation industry (IA)

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Recommendations

- ET weather based irrigation schedule change technology is now available and needs to be adapted and recognized similar to the Energy Star program with it's energy efficient products.

- To be efficient means to be current. To be current, irrigation education opportunities must be readily available, at least annually, and on a local basis. There is a great need for training those in the field that work with the product if water efficiency is to be realized. If not certification will not be feasible.

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Thank you

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